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The electroporation array is comprised of three technologies: microwire glass electrodes, microelectronic multiplexer stimulator chips and microfluidic flow chamber. Various substances, such as genes, gene silencing RNAi, gene inhibition agents or drugs, can be perfused into the microfluidic flow chamber. The entry of the various substances into the cells will be facilitated by electroporation. An applied electric potential causes nanoscale pores to open in the cell membrane allowing substances in the solution to freely diffuse into the cell. The specific cells selected for electroporation are defined using the computer controlled microelectronic stimulator array. An "image" of which electrodes within the array to apply the electric potential to, and thus electroporate, is de-multiplexed onto the array. All the selected electrodes deliver a current pulse varied by the intensity of the de-multiplexed "image". By serially perfusing different substances across the cells or tissue and electroporating different areas of the cell or tissue culture, it will be possible to have different cells within the culture contain different genes, gene silencing RNAi, gene inhibition agents, drugs, chemicals or other substances or sets thereof. It is also possible to re-electroporate subsets of cells on the array to allow for multiple gene combinations. In essence, this invention allows for the creation of *cell arrays* and would be analogous to *gene arrays*, which have been so important in recent advances in biotechnology, such as the human genome project.